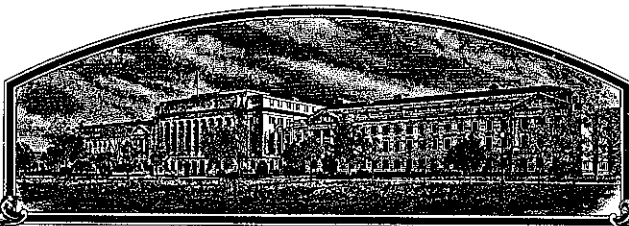


No.

9300097



# THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

*The Ohio State University*

Whereas, THERE HAS BEEN PRESENTED TO THE

**Secretary of Agriculture**

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF *eighteen* YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMBER OF GENERATIONS BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

SOYBEAN

'Thorne'

In Testimony Whereof, I have hereunto set my hand and caused the seal of the Plant Variety Protection Office to be affixed at the City of Washington, D.C. this 29<sup>th</sup> day of September in the year of our Lord one thousand nine hundred and ninety-five.

Attest:

*Marshall A. Stanton*

Commissioner

Plant Variety Protection Office  
Agricultural Marketing Service

*J. H. Whitman*  
Secretary of Agriculture

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

**APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE**  
(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

<b>1. NAME OF APPLICANT(S) (as it is to appear on the Certificate)</b>  Ohio Agricultural Research & Development Center		<b>2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.</b>  HM8890	<b>3. VARIETY NAME</b>  Thorne
<b>4. ADDRESS (street and no. or R.F.D. no., city, state, and ZIP)</b>  1680 Madison Avenue Wooster, Ohio 44691		<b>5. PHONE (Include area code)</b>  216-263-3701	<b>FOR OFFICIAL USE ONLY</b>  PVPO NUMBER  <div style="font-size: 24pt; text-align: center;">9300097</div> <hr/> <div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">F I L I N G</div> <div>                     Date  <u>Jan. 29, 1993</u>                      Title _____  <input type="checkbox"/> A.M. <input type="checkbox"/> P.M.                 </div> </div> <hr/> <div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">F E E S</div> <div>                     Filing and Examination Fee:  <u>\$2150. + 175.00</u>                      Date  <u>Jan. 29, 1993</u> </div> </div> <hr/> <div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold;">R E C E I V E D</div> <div>                     Certificate Fee:  <u>\$275.00</u>                      Date  <u>August 14, 1995</u> </div> </div>
<b>6. GENUS AND SPECIES NAME</b>  <u>Glycine max</u>	<b>7. FAMILY NAME (Botanical)</b>  Fabaceae (Leguminasde)		
<b>8. CROP KIND NAME (Common Name)</b>  Soybean	<b>9. DATE OF DETERMINATION</b>  February 7, 1992		
<b>10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION (Corporation, partnership, association, etc.)</b>  State Agricultural Experiment Station			
<b>11. IF INCORPORATED, GIVE STATE OF INCORPORATION</b>	<b>12. DATE OF INCORPORATION</b>		
<b>13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS</b>  S. K. St. Martin Department of Agronomy, OARDC-OSU 2021 Coffey Road Columbus, OH 43210			
			PHONE (Include area code): 614-292-8499

**14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow INSTRUCTIONS on reverse)**

a. ☒ Exhibit A, Origin and Breeding History of the Variety.

b. ☒ Exhibit B, Novelty Statement.

c. ☒ Exhibit C, Objective Description of Variety.

d. ☐ Exhibit D, Additional Description of Variety.

e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.

f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office \_\_\_\_\_

g. ☒ Filing and Examination Fee (\$2,150) made payable to "Treasurer of the United States."

**15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? (See section 83(a) of the Plant Variety Protection Act.)**

☒ YES (If "YES," answer items 16 and 17 below) ☐ NO (If "NO," skip to item 18 below)

**16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?**

☐ YES ☒ NO

**17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?**

☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

**18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?**

☐ YES (If "YES," through ☐ Plant Variety Protection Act ☐ Patent Act. Give date: \_\_\_\_\_)

☒ NO

**19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?**

☐ YES (If "YES," give names of countries and dates)

☒ NO

**20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.**

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT [Owner(s)] 	CAPACITY OR TITLE Associate Professor Department of Agronomy	DATE 9-1-92
SIGNATURE OF APPLICANT [Owner(s)]	CAPACITY OR TITLE	DATE

## 'Thorne' Exhibit A - Origin and Breeding History

'Thorne' soybean was previously tested as the advanced line HM8890 and breeding line OX8331-1-14 from the cross OX8331-1 (A80-344003 x A3127BC3F2-1) and was developed by the Ohio Agricultural Research and Development Center, The Ohio State University (OARDC-OSU). The Iowa breeding line A80-344003 was tested in the Uniform Soybean Tests, Northern States and therefore available as germplasm to the OSU-OARDC breeder. It is from the cross A75-332035 x 'Century' (the line A75-332035 is a sister line to 'BSR301'). The line A3127BC3F2-1 is an OARDC breeding line selected from the backcross 'A3127'<sup>4</sup> x L24. The line L24 is from 'Williams'<sup>7</sup> x 'Kingwa'.

Cross OX8331-1 was made in the summer 1983 at Wooster, OH. The  $F_1$  and the  $F_3$  and  $F_4$  bulks (single pod descent) were grown in the winters of 1983-1984 and 1984-1985, respectively, at Mayaguez, Puerto Rico. The  $F_2$  and the  $F_5$  random bulk were grown in Wooster in the summers of 1984 and 1985, respectively. Twenty-one  $F_5$  plants were selected from OX8331-1 and grown in 1986. Three  $F_5$ -derived lines were selected for further testing in 1987. One line, redesignated HM8890, was advanced to the Ohio advanced trials in 1988. HM8890 was evaluated in state trials from 1988 to 1991 and in the Uniform Soybean Tests, Northern States from 1989 to 1991. HM8890 was increased using 14  $F_8$  plants grown in single plots in 1989 and 1990. The bulk of these plots was used for the breeder seed of Thorne. HM8890 was named Thorne after the first Director of the Ohio Agricultural Experiment Station, the forerunner of OSU-OARDC.

Thorne was released August 1, 1992, because of its superior yield in comparisons to Resnik. Compared to Resnik, Thorne is about 1 day later in maturity and has 5% higher yield in Ohio tests.

Stability of Thorne's agronomic and other characteristics is evidenced by consistent performance relative to other varieties in Ohio and regional tests. The uniformity of Thorne is similar to that of other soybean varieties.

## 'Thorne' Exhibit B - Novelty Statement

'Thorne' is most similar to 'Resnik' in agronomic characteristics. Like Resnik, it carries the Rps1-k gene for resistance to phytophthora rot. Thorne is most easily distinguished from Resnik by mature pod color and reaction to brown stem rot. Thorne has brown pods and is resistant to brown stem rot; Resnik has tan pods and is susceptible to brown stem rot.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

EXHIBIT C  
(Soybean)

PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY  
SOYBEAN (*Glycine max* L.)

NAME OF APPLICANT(S) Ohio Agricultural Research and Development Center	TEMPORARY DESIGNATION HM8890	VARIETY NAME Thorne
ADDRESS (Street and No., or R.F.D. No., City, State, and Zip Code) 1680 Madison Avenue Wooster, OH 44691		FOR OFFICIAL USE ONLY PVPO NUMBER 9300097

Choose the appropriate response which characterizes the variety in the features described below. When the number of significant digits in your answer is fewer than the number of boxes provided, place a zero in the first box when number is 9 or less (e.g.,   ). Starred characters ★ are considered fundamental to an adequate soybean variety description. Other characters should be described when information is available.

1. SEED SHAPE:



1 = Spherical (L/W, L/T, and T/W ratios = < 1.2)  
3 = Elongate (L/T ratio > 1.2; T/W = < 1.2)

2 = Spherical Flattened (L/W ratio > 1.2; L/T ratio = < 1.2)  
4 = Elongate Flattened (L/T ratio > 1.2; T/W > 1.2)

★ 2. SEED COAT COLOR: (Mature Seed)

1 = Yellow      2 = Green      3 = Brown      4 = Black      5 = Other (Specify) \_\_\_\_\_

3. SEED COAT LUSTER: (Mature Hand Shelled Seed)

1 = Dull ('Corsoy 79'; 'Braxton')      2 = Shiny ('Nebsoy'; 'Gasoy 17')

★ 4. SEED SIZE: (Mature Seed)

Grams per 100 seeds

★ 5. HILUM COLOR: (Mature Seed)

1 = Buff      2 = Yellow      3 = Brown      4 = Gray      5 = Imperfect Black      6 = Black      7 = Other (Specify) \_\_\_\_\_

★ 6. COTYLEDON COLOR: (Mature Seed)

1 = Yellow      2 = Green

★ 7. SEED PROTEIN PEROXIDASE ACTIVITY:

1 = Low      2 = High

★ 8. SEED PROTEIN ELECTROPHORETIC BAND:

1 = Type A (SP1<sup>a</sup>)      2 = Type B (SP1<sup>b</sup>)

★ 9. HYPOCOTYL COLOR:

1 = Green only ('Evans'; 'Davis')      2 = Green with bronze band below cotyledons ('Woodworth'; 'Tracy')  
3 = Light Purple below cotyledons ('Beeson'; 'Pickett 71')  
4 = Dark Purple extending to unifoliate leaves ('Hodgson'; 'Coker Hampton 266A')

★ 10. LEAFLET SHAPE:

1 = Lanceolate      2 = Oval      3 = Ovate      4 = Other (Specify) \_\_\_\_\_

## 11. LEAFLET SIZE:

☐ 21 = Small ('Amsoy 71'; 'A5312')  
3 = Large ('Crawford'; 'Tracy')

2 = Medium ('Corsoy 79'; 'Gasoy 17')

## 12. LEAF COLOR:

☐ 31 = Light Green ('Weber'; 'York')  
3 = Dark Green ('Gnome'; 'Tracy')

2 = Medium Green ('Corsoy 79'; 'Braxton')

## ★ 13. FLOWER COLOR:

☐ 1

1 = White

2 = Purple

3 = White with purple throat

## ★ 14. POD COLOR:

☐ 2

1 = Tan

2 = Brown

3 = Black

## ★ 15. PLANT PUBESCENCE COLOR:

☐ 2

1 = Gray

2 = Brown (Tawny)

## 16. PLANT TYPES:

☐ 21 = Slender ('Essex'; 'Amsoy 71')  
3 = Bushy ('Gnome'; 'Govan')

2 = Intermediate ('Amcor'; 'Braxton')

## ★ 17. PLANT HABIT:

☐ 3

1 = Determinate ('Gnome'; 'Braxton')

2 = Semi-Determinate ('Will')

3 = Indeterminate ('Nebsoy'; 'Improved Pelican')

## ★ 18. MATURITY GROUP:

☐ 0 ☐ 6

1 = 000

2 = 00

3 = 0

4 = I

5 = II

6 = III

7 = IV

8 = V

9 = VI

10 = VII

11 = VIII

12 = IX

13 = X

## ★ 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

## BACTERIAL DISEASES:

★ ☐ 0Bacterial Pustule (*Xanthomonas phaseoli* var. *sojensis*)★ ☐ 1Bacterial Blight (*Pseudomonas glycinea*)★ ☐ 0Wildfire (*Pseudomonas tabaci*)

## FUNGAL DISEASES:

★ ☐ 0Brown Spot (*Septoria glycines*)Frogeye Leaf Spot (*Cercospora sojina*)★ ☐ 0

Race 1

☐ 0 Race 2☐ 0 Race 3☐ 0 Race 4☐ 0 Race 5☐ Other (Specify)☐ 0Target Spot (*Corynespora cassicola*)☐ 0Downy Mildew (*Peronospora trifoliorum* var. *manshurica*)☐ 0Powdery Mildew (*Microsphaera diffusa*)★ ☐ 2Brown Stem Rot (*Cephalosporium gregatum*)☐ 0Stem Canker (*Diaporthe phaseolorum* var. *caulivora*)

## 19. DISEASE REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant) (Continued)

## FUNGAL DISEASES: (Continued)

- ★ ☐ 2 Pod and Stem Blight (*Diaporthe phaseolorum* var. *sojae*)
- ☐ 1 Purple Seed Stain (*Cercospora kikuchii*)
- ☐ 0 Rhizoctonia Root Rot (*Rhizoctonia solani*)
- Phytophthora Rot (*Phytophthora megasperma* var. *sojae*)
- ★ ☐ 2 Race 1 ☐ 2 Race 2 ☐ 2 Race 3 ☐ 2 Race 4 ☐ 2 Race 5 ☐ 2 Race 6 ☐ 2 Race 7
- ☐ 2 Race 8 ☐ 2 Race 9 ☐ 2 Other (Specify) 10, 11, 13, 14, 15, 17, 18, 20, 21, 22, 23, 24

## VIRAL DISEASES:

- ☐ 0 Bud Blight (Tobacco Ringspot Virus)
- ☐ 0 Yellow Mosaic (Bean Yellow Mosaic Virus)
- ★ ☐ 0 Cowpea Mosaic (Cowpea Chlorotic Virus)
- ☐ 0 Pod Mottle (Bean Pod Mottle Virus)
- ★ ☐ 1 Seed Mottle (Soybean Mosaic Virus)

## NEMATODE DISEASES:

- Soybean Cyst Nematode (*Heterodera glycines*)
- ★ ☐ 1 Race 1 ☐ 1 Race 2 ☐ 1 Race 3 ☐ 1 Race 4 ☐ Other (Specify) \_\_\_\_\_
- ☐ 0 Lance Nematode (*Hoplolaimus Colombus*)
- ★ ☐ 0 Southern Root Knot Nematode (*Meloidogyne incognita*)
- ★ ☐ 0 Northern Root Knot Nematode (*Meloidogyne Hapla*)
- ☐ 0 Peanut Root Knot Nematode (*Meloidogyne arenaria*)
- ☐ 0 Reniform Nematode (*Rotylenchulus reniformis*)
- ☐ OTHER DISEASE NOT ON FORM (Specify): \_\_\_\_\_

## 20. PHYSIOLOGICAL RESPONSES: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ★ ☐ 2 Iron Chlorosis on Calcareous Soil
- ☐ Other (Specify) \_\_\_\_\_

## 21. INSECT REACTION: (Enter 0 = Not Tested; 1 = Susceptible; 2 = Resistant)

- ☐ 1 Mexican Bean Beetle (*Epilachna varivestis*)
- ☐ 2 Potato Leaf Hopper (*Empoasca fabae*)
- ☐ Other (Specify) \_\_\_\_\_

## 22. INDICATE WHICH VARIETY MOST CLOSELY RESEMBLES THAT SUBMITTED.

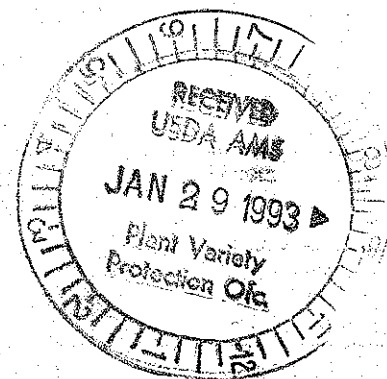
CHARACTER	NAME OF VARIETY	CHARACTER	NAME OF VARIETY
Plant Shape		Seed Coat Luster	
Leaf Shape		Seed Size	
Leaf Color	Flyer	Seed Shape	
Leaf Size	Flyer	Seedling Pigmentation	

## 23. GIVE DATA FOR SUBMITTED AND SIMILAR STANDARD VARIETY: Paired Comparison Data

VARIETY	NO. OF DAYS MATURITY	PLANT LODGING SCORE	CM PLANT HEIGHT	LEAFLET SIZE		SEED CONTENT		SEED SIZE G/100 SEEDS	NO. SEEDS/POD
				CM Width	CM Length	% Protein	% Oil		
Submitted	123	1.5	79			41.1	21.2	17.2	
Resnik Name of Similar Variety	121	1.3	79			41.4	21.0	15.3	

## PUBLICATIONS USEFUL AS REFERENCE AIDS FOR COMPLETING THIS FORM:

1. Caldwell, B.E., ed. 1973. Soybeans: Improvement, Production, and Uses. Amer. Soc. Agron. Monograph No. 16.
2. Buttery, B.R. and R.I. Buzzell. 1968. Peroxidase activity in seeds of soybean varieties. Crop Sci., 8: 722-725.
3. Hymowitz, T. 1973. Electrophoretic analysis of SBTI-A<sub>2</sub> in the USDA soybean germplasm collection. Crop Sci., 13: 420-421.
4. Payne, R.C. and L.F. Morris. 1976. Differentiation of soybean cultivars by seedling pigmentation patterns. J. Seed Technol. 1: 1-19.





'Thorne' Exhibit E - Statement of the Basis of Applicant's Ownership

'Thorne' soybean is considered to be owned by the Ohio Agricultural Research and Development Center of The Ohio State University. The crosses, selection, testing, and increase of the variety were conducted by OSU-OARDC breeders and their supervised staff, or completed by means of arrangements with other public institutions which in no way compromised ownership by OSU-OARDC.